Exhibit 1-2

Ecological Soil Screening Level Guidance - Draft

Discussions Concerning Soil Microbial Processes

June 27, 2000

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Options Analysis
The use of microbial endpoints in establishing Eco- SSLs.

Background

At the Eco-SSL Steering Committee meeting of October 9, 1999 in Denver, the Steering Committee agreed to review the various options regarding the use of microbial endpoints in establishing Eco-SSLs. These options would be distributed to the steering committee to allow for a more "formal" and sequential analysis of the options. A final decision on whether microbial endpoints should or should not be used in developing Eco-SSLs would at a future meeting to be held in late November or December, 1999.

The options were developed using the information provided from previous ESSLs meetings as well as the detailed discussion of this issue in the journal *Human and Ecological Risk Assessment* (see HERA Vol. 5, No. 4, August 1999, pp. 657-715).

Options

Although there are perhaps an infinite number of permutations, the number of basic options is three. No doubt each option will / could have a number of caveats and other amendments – some of these are noted in the detailed analysis.

1. Do not use microbial endpoints in developing current Eco-SSLs.

2. Use microbial endpoints in developing current Eco-SSLs.

3. Defer the use of microbial endpoints in developing the current Eco-SSLs to allow the state of the science and practice to improve.

Option	Pro	Con
1. Do not use microbial endpoints in developing current Eco-SSLs.	· State of the science and practice are not ready for application in ERA (or screening level assessments). · Data interpretation would be difficult and perhaps not in concert with approaches used for soil invertebrates, plants or wildlife.	· Fails to include an important ecological function in early screening evaluation. · Eco-SSLs set for protection of plants, soil invertebrates or wildlife may not be protective of microbial communities. · May appear to be a policy decision based more on perception (feasibility) rather than science.
2. Use microbial endpoints in developing current Eco-SSLs.	· Includes an important ecological function in the early screening evaluation. · Appears to be consistent with concepts of assessment endpoints exposed in EPA ERA framework / guidelines. · Provides holistic evaluation.	· Will require substantial data evaluation and collection not currently planned for the Eco-SSL effort currently. · May delay Eco-SSL publication. · May present a problem in communication when dealing with risk managers. · Results will be difficult to interpret as there is no unified agreement on which endpoints or tests are useful. A major issue is anticipated with regards to the type of tests that would be embraced and their interpretation. There is little in the HERA series to suggest that microbiologists are on the same page. · Microbial communities are likely to be quite diverse across sites and dynamic – there will be high uncertainty as to the meaning of the results obtained.
3. Defer using microbial endpoints in developing current ESSLs to allow the state of the science and practice to improve .	· Reflects reality given the wide diversity of opinion on this endpoint. · Does not delay the publication of Eco-SSLs while allowing time for the science to catch up with the policy. · May be a good compromise that acknowledges the importance of these organisms to terrestrial ecosystems yet recognizes the constraints we are faced with on the Eco-SSLs effort.	· Only extends a difficult decision to another time. · Improvements in the state of the science and practice may take much longer than expected. · Unlikely that the Eco-SSL workgroup will continue after establishing the Eco-SSLs and the current level of expertise and sweat equity now present may be absent.